



[Billing Code 4140-01-P]

**DEPARTMENT OF HEALTH AND HUMAN SERVICES**

**National Institutes of Health**

**Prospective Grant of an Exclusive Patent License: Use of the CD47**

**Phosphorodiamidate Morpholino Oligomers for the Treatment, Prevention, and  
Diagnosis of Solid Tumors**

**AGENCY:** National Institutes of Health, HHS

**ACTION:** Notice.

**SUMMARY:** The National Cancer Institute, an institute of the National Institutes of Health, Department of Health and Human Services, is contemplating the grant of an Exclusive Patent License to practice the inventions embodied in the Patents and Patent Applications listed in the Supplementary Information section of this notice to Morphix Biotherapeutics (“Morphix”) located in Boston, MA.

**DATES:** Only written comments and/or applications for a license which are received by the National Cancer Institute’s Technology Transfer Center on or before [INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER] will be considered.

**ADDRESSES:** Requests for copies of the patent application, inquiries, and comments relating to the contemplated an Exclusive Patent License should be directed to: Jaime Greene, Senior Licensing and Patenting Manager, NCI Technology Transfer Center, 9609 Medical Center Drive, RM 1E530 MSC 9702, Bethesda, MD 20892-9702 (for business mail), Rockville, MD 20850-9702 Telephone: (240)-276-5530; Facsimile: (240)-276-5504 E-mail: [greenejaime@mail.nih.gov](mailto:greenejaime@mail.nih.gov).

## **SUPPLEMENTARY INFORMATION:**

This is in reference to previous notices 83 FR 22501, which was a Prospective Grant of an Exclusive Patent License to Morphix for the field of use “the use of the CD47 phosphorodiamidate morpholino oligomers (PMO, morpholino, Sequence: 5'-CGTCACAGGCAGGACCCACTGCCCCA-3') for the treatment, prevention, and diagnosis of hematological cancers (e.g. lymphoma, leukemia, multiple myeloma), excluding uses in combination with radiotherapy”, and 84 FR 1764, which was a Prospective Grant of an Exclusive Patent License to Morphix for the field of use “the use of the CD47 phosphorodiamidate morpholino oligomers (PMO, morpholino, Sequence: 5'-CGTCACAGGCAGGACCCACTGCCCCA-3') for the treatment, prevention, and diagnosis of hematological cancers (e.g. lymphoma, leukemia, multiple myeloma), excluding uses in combination with radiotherapy.”

### **Intellectual Property**

1. Provisional Patent Application No. 61/621,994, filed April 9, 2012, now abandoned (HHS Ref. No. E-086-2012-0-US-01);
2. Provisional Patent Application No. 61/735,701, filed December 11, 2012, now abandoned (HHS Ref. No. E-086-2012-1-US-01);
3. PCT Patent Application No. PCT/US2013/035838, filed April 9, 2013, now abandoned (HHS Ref. No. E-086-2012-2-PCT-01);
4. Australian Patent No. 2013246040, issued March 14, 2019, filed April 9, 2013 (HHS Ref. No. E-086-2012-2-AU-02);
5. Canadian Patent No. 2869913, issued September 10, 2019, filed April 9, 2013 (HHS Ref. No. E-086-2012-2-CA-03);
6. European Patent No. 2836591, issued June 6, 2018, filed April 9, 2013 (HHS Ref. No. E-086-2012-2-EP-04);
7. US Patent No. 10407665, issued September 10, 2019, filed October 2, 2014 (HHS Ref. No. E-086-2012-2-US-05);
8. German Patent No. 2836591, issued June 6, 2018, filed April 9, 2013 (HHS Ref. No. E-086-2012-2-DE-07);
9. French Patent No. 2836591, issued June 6, 2018, filed April 9, 2013 (HHS Ref. No. E-086-2012-2-FR-08);
10. United Kingdom Patent No. 2836591, issued June 6, 2018, filed April 9, 2013 (HHS Ref. No. E-086-2012-2-GB-09);
11. US Patent Application No. 16/521,251, filed July 24, 2019 (HHS Ref. No. E-086-

- 2012-2-US-10);
12. Provisional Patent Application No. 61/086,991, filed August 7, 2008, now abandoned (HHS Ref. No. E-153-2008-0-US-01);
  13. PCT Patent Application No. PCT/US2009/052902, filed August 5, 2009, now abandoned (HHS Ref. No. E-153-2008-0-PCT-02);
  14. Australian Patent No. 2009279676, issued July 30, 2015, filed August 5, 2009 (HHS Ref. No. E-153-2008-0-AU-03);
  15. Canadian Patent No. 2732102, issued January 2, 2018, filed August 5, 2009 (HHS Ref. No. E-153-2008-0-CA-04);
  16. European Patent No. 2340034, issued January 27, 2016, filed August 5, 2009 (HHS Ref. No. E-153-2008-0-EP-05);
  17. US Patent No. 8951527, issued February 10, 2015, filed February 3, 2011 (HHS Ref. No. E-153-2008-0-US-06);
  18. German Patent No. 602009036069.8, issued January 27, 2016, filed August 5, 2009 (HHS Ref. No. E-153-2008-0-DE-07);
  19. French Patent No. 2340034, issued January 27, 2016, filed August 5, 2009 (HHS Ref. No. E-153-2008-0-FR-08);
  20. United Kingdom Patent No. 2340034, issued January 27, 2016, filed August 5, 2009 (HHS Ref. No. E-153-2008-0-GB-09);
  21. Provisional Patent Application No. 61/779,587, filed March 13, 2013, now abandoned (HHS Ref. No. E-296-2011-0-US-01);
  22. PCT Patent Application No. PCT/US2014/025989, filed March 13, 2014, now abandoned (HHS Ref. No. E-296-2011-0-PCT-02);
  23. Australian Patent No. 2014244083, issued January 10, 2019, filed March 13, 2014, now abandoned (HHS Ref. No. E-296-2011-0-AU-03);
  24. Canadian Patent Application No. 2905418, filed March 13, 2014 (HHS Ref. No. E-296-2011-0-CA-04);
  25. European Patent Application No. 14718255.4, filed March 13, 2014 (HHS Ref. No. E-296-2011-0-EP-05);
  26. US Patent Application No. 14/775,428, filed September 11, 2015 (HHS Ref. No. E-296-2011-0-US-06).

The patent rights in these inventions have been assigned and/or exclusively licensed to the government of the United States of America.

The prospective exclusive license territory may be worldwide, and the field of use may be limited to those previously advertised in federal register notices 83 FR 22501 84 FR 1764, described in the supplementary information section above.

This technology concerns CD47, originally named integrin-associated protein, which is a receptor for thrombospondin-1 (TSP1), a major component of platelet  $\alpha$ -granules from which it is secreted on platelet activation. A number of important roles for

CD47 have been defined in regulating the migration, proliferation, and survival of vascular cells, and in regulation of innate and adaptive immunity. Nitric Oxide (NO) plays an important role as a major intrinsic vasodilator, and it increases blood flow to tissues and organs. Disruption of this process leads to peripheral vascular disease, ischemic heart disease, stroke, diabetes and many more significant diseases. The inventors have discovered that TSP1 blocks the beneficial effects of NO and prevents it from dilating blood vessels and increasing blood flow to organs and tissues. Additionally, they discovered that this regulation requires TSP1 interaction with its cell receptor, CD47. These inventors have also found that blocking TSP1-CD47 interaction through the use of antisense morpholino oligonucleotides, peptides or antibodies have several therapeutic benefits including the treatment of cancer.

This notice is made in accordance with 35 U.S.C. 209 and 37 CFR Part 404. The prospective exclusive license will be royalty bearing, and the prospective exclusive license may be granted unless within fifteen (15) days from the date of this published notice, the National Cancer Institute receives written evidence and argument that establishes that the grant of the license would not be consistent with the requirements of 35 U.S.C. 209 and 37 CFR Part 404.

In response to this Notice, the public may file comments or objections. Comments and objections, other than those in the form of a license application, will not be treated confidentially, and may be made publicly available.

License applications submitted in response to this Notice will be presumed to contain business confidential information and any release of information in these license applications will be made only as required and upon a request under the Freedom of Information Act, 5 USC 552.

**Dated:** December 20, 2019.

**Richard U. Rodriguez,**

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*National Cancer Institute.*

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